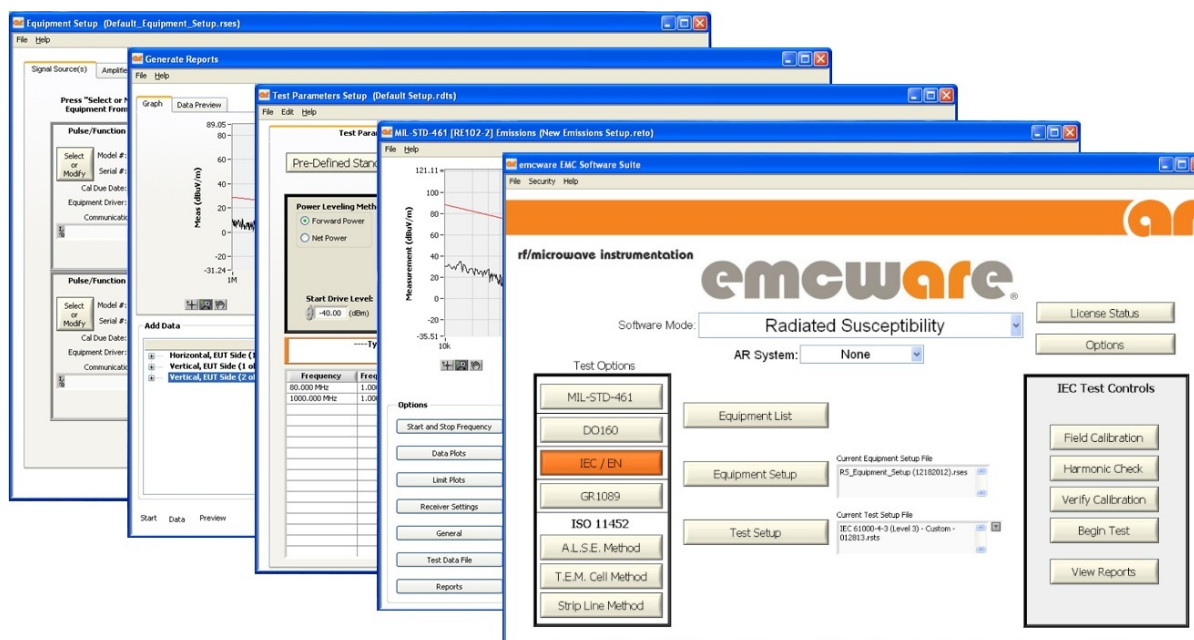


The emcware® Suite by AR RF/Microwave Instrumentation provides automated Electromagnetic Compatibility (EMC) testing and report generation for all types of users from corporate to professional test laboratories. It is a standalone software application designed to operate on a PC running a Microsoft Windows™ operating system. The export classification for this software is EAR99. This software is controlled for export in accordance with the U.S. Export Administration Regulations. Diversion contrary to U.S. law is prohibited.



## Software Design

The emcware® Suite is designed to be user-friendly yet extremely flexible. It is broken up into modules based on different types of EMC testing. Within each module there are pre-defined standards. The ability to create custom test standards is also provided.

## Equipment Management

Contained within the emcware® is a built-in Equipment Manager. This tool allows for equipment to be entered one time and then accessed from within any of the modules. The Equipment Manager also keeps track of calibration dates and can warn the user when the calibration date of a specific piece of equipment is approaching.

## EUT Monitoring

Use custom equipment or an NI DAQ card to monitor and report the status of the equipment under test (EUT). The NI DAQ card enables the use of 16 analog inputs to monitor the EUT and 8 digital outputs for resetting the EUT. Custom equipment, in conjunction with dynamic link library (dll's) files, allows for complete EUT monitoring and control.

## Instrument Drivers

Instrument control is provided through AR RF/Microwave Instrumentation's extensive driver library. Creation of new drivers for equipment that is not currently supported is available upon request. Drivers can also be created and imported by the user in the form of .dll's (dynamic link libraries). For a list of supported remote interfaces, see the **Equipment Interface** section.

## Signal Routing

The emcware<sup>®</sup> is designed to allow the user to select between manual and automatic signal routing. Automatic signal routing is implemented through the use of up to two AR RF/Microwave Instrumentation Model SC1000 System Controllers.

## Reports

Extensive report generation capability is built into each module. These reports can be customized by the user. All reports are created in Microsoft Word or Microsoft Excel.

## Help Instructions

A detailed help utility is included with the emcware<sup>®</sup>. The contents of the help instructions can be searched by keyword or topic. From each topic page, links are also provided to similar topics. A set of tutorials is also provided to demonstrate how to get started with the software.

## Software Licensing

The emcware<sup>®</sup> is fully functional for a period of 60 days from the date of install. Registration is required to obtain a license for operation beyond 60 days.

## AR Systems Compatibility

The emcware<sup>®</sup> can automatically control select AR Systems using built-in equipment setups. See the Compatible Systems for a complete list.

### INCLUDED TEST STANDARDS, emcware<sup>®</sup>

Organization	Standard	Version	Radiated Susceptibility	Conducted Immunity	Radiated Emissions	Conducted Emissions
CISPR	CISPR 11	Ed 5			✓	✓
	CISPR 13	Ed 4			✓	
	CISPR 22	Ed 6			✓	✓
	CISPR 25	Ed 2			✓	✓
	CISPR 32	Ed 1			✓	✓
Department of Defense	MIL-STD-461 RS103	D, E, F	✓			
	MIL-STD-461 CS114	D, E, F		✓		
	MIL-STD-461 RE(101, 102)	D, E, F			✓	
	MIL-STD-461 CE (101, 102)	D, E, F				✓
RTCA	DO-160 Section 20	D, E, F	✓	✓		
	DO-160 Section 21	D, E, F			✓	✓
IEC	61000-4-3	Ed 3	✓			
	61000-4-6	Ed 3		✓		
	50130-4	1996	✓	✓		
	60601-1-2	2007-03	✓	✓		
	61000-6-1	Ed 2	✓	✓		
	61326	Ed 2	✓	✓		
	61000-6-2	Ed 2		✓		
Telcordia Technologies	GR-1089-Core	Issue 3	✓			
International Organization for Standards	ISO-11452-(2, 3, 5)	Ed 2	✓			
	ISO-11452-4	Ed 4		✓		
Ford	ES-XW7T-1A278-AC	10/10/2003	✓	✓		
GM	GMW3097	Rev G	✓	✓		
BMW	GS 95002	2004-10		✓		
Chrysler	DC-11224	2006-10		✓		
Renault	36-00-808	2003		✓		
Peugeot	B21 7110	B		✓		

## **HARDWARE REQUIREMENTS**

### **Minimum**

- 2GHz Single Core Processor
- 2GB RAM
- 2GB Free Hard Disk Space
- 1024 x 768 Screen Resolution
- 2 available USB (2.0) Ports

## **OPERATING ENVIRONMENTS**

- Windows XP, Windows Vista, Windows 7, Windows 8 operating systems

## **SUPPORTED INTERFACE HARDWARE (Not Included)**

- GPIB Interface (NI GPIB-USB-HS) [AR P/N 10013688]
- DAQ Module (NI USB-6212) [AR P/N 10025318]
  - Data acquisition module is used to collect data, identify user defined failures, report user error messages, and reset EUT after failure.

## **MAXIMUM SUPPORTED EQUIPMENT PER TEST**

- 2 Function/Arbitrary Wave Generators
- 6 Signal Generators
- 8 Amplifiers (AR Amplifiers Only)
- 4 Power Meters
- 4 Field Monitors
- 8 Directional Couplers
- 8 Antennas
- 8 Antenna Controllers
- 1 Turn Table
- 1 Probe Positioner
- 2 System Controllers (AR SC1000)

## **EQUIPMENT INTERFACES**

### **Hardware**

- IEEE 488 (GPIB)
- RS-232
- USB
- 8 digital inputs/outputs on DAQ module can be used for EUT monitoring and control.
- 16 analog inputs on DAQ module can be used for EUT monitoring.

### **Drivers**

- A full list of included equipment drivers can be found at the end of this document.
- For equipment that is not currently supported, please contact the factory.
- Equipment drivers can be written by the user in a multitude of programming languages (Labview, C, Visual Basic, etc.) and imported as .dll's (dynamic link libraries).

## **REPORTS**

- Test Setup
  - Test levels and modulation schemes
  - Interconnect diagram
- Equipment Setup
  - Equipment used
  - Calibration dates
- Calibration
  - All Data Collected (numerical & graphical)
  - Standard used (compliant or custom)
  - IEC amplifier linearity and field uniformity data
  - Verification data (numerical & graphical)
- Test
  - All Data Collected (numerical & graphical)
  - All thresholded data (numerical only)
  - EUT pass/fail with user comments
  - DAQ data (numerical only)

## **SPECIAL FEATURES**

- Software allows for up to 2 Modulations in addition to CW per frequency
- Large Bandwidth tests are broken up by antenna bandwidths
- User defined amplitude and frequency thresholding capability (Supports MIL STD 461 thresholding method)
- Pre-defined test standards
- All test standards are user modifiable
- Custom test standards can easily be created
- All setups can be saved and recalled
- Graphical display of test levels
- Graphical display of RF path for easy test configurations and changes
- Automated harmonics check (IEC 61000-4-3)
- Automatic control of AR Systems (see **Compatible Systems**)

## **Compatible Systems**

- CI00250A
- CI00400A
- CI00401A

## **LICENSES**

- 60 day trial license [AR P/N **10027087**]
- Permanent license [AR P/N **10028192**]

## **SUPPORT**

- Service Contract that provides phone and e-mail support (8AM-5PM EST) for a period of one year [AR P/N **10027093**]

# INCLUDED EQUIPMENT DRIVERS, emcware®

## Antenna Controllers

EMCO .....	1050
EMCO .....	1090A
EMCO .....	2090A
SUNOL SCIENCES .....	SC 98VA

## Field Probes/Monitors

AR RF/MICRO INSTR .....	FL70xx Series
AR RF/MICRO INSTR .....	FA70xx Series
AR RF/MICRO INSTR .....	FM2000
AR RF/MICRO INSTR .....	FM5004
AR RF/MICRO INSTR .....	FM7004
AR RF/MICRO INSTR .....	FP40xx Series
AR RF/MICRO INSTR .....	FP6001
AR RF/MICRO INSTR .....	FP70xx Series
CHAUVIN ARNOUX .....	CA43
HOLADAY INDUSTRIES .....	HI-6105
HOLADAY INDUSTRIES .....	HI-6100
IFI .....	FPMS
NARDA .....	EMC-20
NARDA .....	NBM-520
NARDA .....	EMR-200

## Pulse Generators

AGILENT .....	33220A
HEWLETT PACKARD .....	3325A
HEWLETT PACKARD .....	8116A
HEWLETT PACKARD .....	81101A

## Power Meters

AGILENT .....	E4417A
AGILENT .....	E4418
AGILENT .....	E4419
AGILENT .....	E4402B
AGILENT .....	E4404B
AGILENT .....	E4407B
AGILENT .....	N9000A
AGILENT .....	N9010A
AGILENT .....	N9020A
AGILENT .....	N9030A
AGILENT .....	N9320A
AR RF/MICRO INSTR .....	PM2002
AR RF/MICRO INSTR .....	PM2003
BIRD .....	4421
BOONTON .....	4230
BOONTON .....	9200
DARE .....	RPR1004A
DARE .....	RPR1006A
DARE .....	RPR1018A
HEWLETT PACKARD .....	436A
HEWLETT PACKARD .....	437B
HEWLETT PACKARD .....	438A
HEWLETT PACKARD .....	8560
HEWLETT PACKARD .....	8561
HEWLETT PACKARD .....	8562
HEWLETT PACKARD .....	8563
HEWLETT PACKARD .....	8564
HEWLETT PACKARD .....	8565
HEWLETT PACKARD .....	8591
HEWLETT PACKARD .....	8592
HEWLETT PACKARD .....	8595
HEWLETT PACKARD .....	8596
HEWLETT PACKARD .....	E4446A
HEWLETT PACKARD .....	E740Xa
HEWLETT PACKARD .....	EPM 441
HEWLETT PACKARD .....	EPM 442
MARCONI .....	6960
ROHDE & SCHWARZ .....	NRP
ROHDE & SCHWARZ .....	NRVS
ROHDE & SCHWARZ .....	NRVD
ROHDE & SCHWARZ .....	URV5

## Probe Positioner

PROBOTIC SYSTEMS .....	801
TDK .....	SI 300

## Spectrum Analyzers

AGILENT .....	CXA N9000A
AGILENT .....	ESA SERIES
AGILENT .....	EXA N9010A
AGILENT .....	MXA N9020A
AGILENT .....	PSA SERIES
AGILENT .....	PXA N9030
HEWLETT PACKARD .....	856X SERIES
HEWLETT PACKARD .....	859X SERIES
HEWLETT PACKARD .....	E740xA
ROHDE & SCHWARZ .....	ESU

## System Controller

AR RF/MICRO INSTR .....	SC1000
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## Pre-Amplifiers

AR RF/MICRO INSTR .....	CI00400/401 Systems
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## Signal Generators

AGILENT .....	33120A
AGILENT .....	N5183A
AGILENT .....	N9310A
ANRITSU .....	MG3694A
AR RF/MICRO INSTR .....	SG1200
AR RF/MICRO INSTR .....	SG6000
FLUKE .....	6060A
FLUKE .....	6061A
FLUKE .....	6062A
GIGATRONICS .....	1018
GIGATRONICS .....	6080A
GIGATRONICS .....	12000A
HEWLETT PACKARD .....	3336C
HEWLETT PACKARD .....	8341
HEWLETT PACKARD .....	8350B
HEWLETT PACKARD .....	8642A
HEWLETT PACKARD .....	8642B
HEWLETT PACKARD .....	8648
HEWLETT PACKARD .....	8657A
HEWLETT PACKARD .....	8657B
HEWLETT PACKARD .....	8662A
HEWLETT PACKARD .....	8663A
HEWLETT PACKARD .....	8664A
HEWLETT PACKARD .....	8673B
HEWLETT PACKARD .....	83620B
HEWLETT PACKARD .....	83630B
HEWLETT PACKARD .....	83731
HEWLETT PACKARD .....	E8257C
HEWLETT PACKARD .....	E8257D
HEWLETT PACKARD .....	ESG
IFR .....	341X SERIES
MARCONI .....	2022
MARCONI .....	2023
MARCONI .....	2024
MARCONI .....	2025
MARCONI .....	2030
MARCONI .....	2031
MARCONI .....	2032
ROHDE & SCHWARZ .....	SMB
ROHDE & SCHWARZ .....	SMBV100A
ROHDE & SCHWARZ .....	SME
ROHDE & SCHWARZ .....	SMF
ROHDE & SCHWARZ .....	SMG
ROHDE & SCHWARZ .....	SMH
ROHDE & SCHWARZ .....	SML
ROHDE & SCHWARZ .....	SMP
ROHDE & SCHWARZ .....	SMR
ROHDE & SCHWARZ .....	SMT
ROHDE & SCHWARZ .....	SMX
ROHDE & SCHWARZ .....	SMY

**Signal Generators (cont'd)**

WILTRON .....	6668B
WILTRON .....	6747A

**Turntable Controllers**

EMCO .....	1060
EMCO .....	1090T
EMCO .....	2090T
SUNOL SCIENCES .....	SC98VT

**Amplifiers**

AR RF/MICRO INSTR .....	10000A250A
AR RF/MICRO INSTR .....	10000A225
AR RF/MICRO INSTR .....	1000A225
AR RF/MICRO INSTR .....	1000A250
AR RF/MICRO INSTR .....	1000TxGx Series
AR RF/MICRO INSTR .....	1000W1000C
AR RF/MICRO INSTR .....	1000W1000D
AR RF/MICRO INSTR .....	100A250A
AR RF/MICRO INSTR .....	100S1G4
AR RF/MICRO INSTR .....	100W1000B
AR RF/MICRO INSTR .....	10S1G4A
AR RF/MICRO INSTR .....	10S4G11A
AR RF/MICRO INSTR .....	10S4G18
AR RF/MICRO INSTR .....	10S6G18
AR RF/MICRO INSTR .....	10W1000C
AR RF/MICRO INSTR .....	10WD1000
AR RF/MICRO INSTR .....	1200S1G4
AR RF/MICRO INSTR .....	120S1G3
AR RF/MICRO INSTR .....	120S1G4
AR RF/MICRO INSTR .....	120S4G8
AR RF/MICRO INSTR .....	120TxGx Series
AR RF/MICRO INSTR .....	130TxGx Series
AR RF/MICRO INSTR .....	1500A3A
AR RF/MICRO INSTR .....	1500TxGx Series
AR RF/MICRO INSTR .....	150A100B
AR RF/MICRO INSTR .....	150A250
AR RF/MICRO INSTR .....	150A400
AR RF/MICRO INSTR .....	150W1000
AR RF/MICRO INSTR .....	15S1G3
AR RF/MICRO INSTR .....	15S1G4
AR RF/MICRO INSTR .....	15S4G8
AR RF/MICRO INSTR .....	15S4G8A
AR RF/MICRO INSTR .....	15TxGx Series
AR RF/MICRO INSTR .....	16000A225
AR RF/MICRO INSTR .....	1700TxGx Series
AR RF/MICRO INSTR .....	175S1G4
AR RF/MICRO INSTR .....	2000TxGx Series
AR RF/MICRO INSTR .....	2000W1000A
AR RF/MICRO INSTR .....	200A400
AR RF/MICRO INSTR .....	200S1G4A
AR RF/MICRO INSTR .....	200TxGx Series
AR RF/MICRO INSTR .....	20S1G4
AR RF/MICRO INSTR .....	20S4G11A
AR RF/MICRO INSTR .....	20S4G18
AR RF/MICRO INSTR .....	20S6G18
AR RF/MICRO INSTR .....	20S8G20A
AR RF/MICRO INSTR .....	20TxGx Series
AR RF/MICRO INSTR .....	240S1G3A
AR RF/MICRO INSTR .....	240S1G4
AR RF/MICRO INSTR .....	2500A225
AR RF/MICRO INSTR .....	2500A250A
AR RF/MICRO INSTR .....	250A250A
AR RF/MICRO INSTR .....	250AP250A
AR RF/MICRO INSTR .....	250S1G2A
AR RF/MICRO INSTR .....	250S1G4
AR RF/MICRO INSTR .....	250TxGx Series
AR RF/MICRO INSTR .....	250W1000A
AR RF/MICRO INSTR .....	25S1G4A
AR RF/MICRO INSTR .....	3000W1000
AR RF/MICRO INSTR .....	300TxGx Series
AR RF/MICRO INSTR .....	30S1G3
AR RF/MICRO INSTR .....	30S1G4
AR RF/MICRO INSTR .....	30W1000

AR RF/MICRO INSTR .....	30W1000B
AR RF/MICRO INSTR .....	3500A100A
AR RF/MICRO INSTR .....	350S1G4
AR RF/MICRO INSTR .....	35S4G8A
AR RF/MICRO INSTR .....	4000W1000
AR RF/MICRO INSTR .....	400S1G4
AR RF/MICRO INSTR .....	40S1G4
AR RF/MICRO INSTR .....	40S4G11A
AR RF/MICRO INSTR .....	40S6G18
AR RF/MICRO INSTR .....	40TxGx Series
AR RF/MICRO INSTR .....	450S1G3
AR RF/MICRO INSTR .....	450S1G4
AR RF/MICRO INSTR .....	5000A225
AR RF/MICRO INSTR .....	5000A250A
AR RF/MICRO INSTR .....	500A100A
AR RF/MICRO INSTR .....	500A250
AR RF/MICRO INSTR .....	500A250A
AR RF/MICRO INSTR .....	500A250B
AR RF/MICRO INSTR .....	500TxGx Series
AR RF/MICRO INSTR .....	500W1000A
AR RF/MICRO INSTR .....	50S1G4A
AR RF/MICRO INSTR .....	50TxGx Series
AR RF/MICRO INSTR .....	50W1000B
AR RF/MICRO INSTR .....	540S1G4
AR RF/MICRO INSTR .....	600S1G4
AR RF/MICRO INSTR .....	60S1G3
AR RF/MICRO INSTR .....	60S1G4
AR RF/MICRO INSTR .....	60S1G4A
AR RF/MICRO INSTR .....	60S4G8
AR RF/MICRO INSTR .....	682
AR RF/MICRO INSTR .....	70TxGx Series
AR RF/MICRO INSTR .....	75A250A
AR RF/MICRO INSTR .....	75A400
AR RF/MICRO INSTR .....	800A3A
AR RF/MICRO INSTR .....	80S1G4
AR RF/MICRO INSTR .....	80S4G11
AR RF/MICRO INSTR .....	90S4G8
AR RF/MICRO INSTR .....	Dual Band Amps
AR RF/MICRO INSTR .....	Amplifiers that use Model CP3000A for remote communication.